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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/607,858

Filing Date: June 27, 2003

Appellant(s): JAFFEE, ALAN MICHAEL

Robert Touslee
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed October 12, 2007 appealing from the Office action mailed December 27, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,772,846	JAFFEE	06-1998
6,365,533	HORNER	04-2002
7,056,582	CARBO	06-2006
4,647,496	LEHNERT	03-1987
4,637,951	GILL	01-1987
6,187,697	JAFFEE	02-2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6, 8-15, 17-19, 21-24, 26-27 and 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,772,846 to Jaffee.

Jaffee is directed to a nonwoven glass fiber mat for facing gypsum board (Title).

As to claims 1, 19-22, 27 and 32, Jaffee teaches a nonwoven fibrous mat for use as a facer on a gypsum insulating board (column 2 lines 1-15). Jaffee teaches that the mat comprises a major portion of textile glass fibers and may comprise a minor portion of other fibers (column 2 lines 50-60). Jaffee teaches that the nonwoven mat is bound together with a latex (column 2 lines 35-45). The Examiner equates the latex to Appellant's "resinous binder". Jaffee teaches that the glass fibers can have a length between 0.25 and 1 inch which is equal to 6.35-25.4 mm (column 3 lines 55-60). Examiner equates this short length to Appellant's "chopped glass fibers". Jaffee teaches that the glass fibers have an average diameter from about 9 μ m to 20 μ m (column 3 lines 35-40). Jaffee states that it is known to face a gypsum wall board with a fiber glass nonwoven mat as shown in USPN 4,647,496, the disclosure of which is hereby

incorporated by reference. It should be noted that the phase “incorporated by reference” means that the information incorporated is as much a part of patent as if the text was repeated in the patent, and should be treated as part of the text of the patent. Therefore, although not explicitly shown in Jaffee, the incorporated USPN 4,647,496 shows in Figure 8 that the nonwoven fibrous mat facing materials are applied to both sides of the gypsum board. It should be noted that both of the facing materials have the same composition. USPN 4,647,496 further teaches that the gypsum material is “set” (Abstract). Examiner equates the facing material applied to the first and second sides of the gypsum board as “first facer” and “second facer”.

In regards to the transitional phrase of “consisting essentially of”, the phrase limits the scope of a claim to the specified materials or steps “and those that do not materially affect the basic and novel characteristic(s)” of the claimed invention. *In re Herz*, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976). The burden is upon Appellant to show that the additional components do affect the basic and novel characteristics of the invention. For the purposes of searching for and applying prior art under 35 U.S.C. 102 and 103, absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, “consisting essentially of” will be construed as equivalent to “comprising.” See MPEP 2111.03. Appellant may wish to amend the claim to use the transitional phrase “consisting of” which excludes any element, step, or ingredient not specified in the claim. For the purposes of examination at this time, Examiner will interpret “consisting essentially of” as “comprising”.

As to claims 2 and 3, Jaffee teaches that the glass fibers can comprise any type of glass fibers, but E type, C type, T type and sodium borosilicate are preferred (column 3 lines 34-40).

As to claims 4-6, Jaffee teaches that the glass fibers have an average diameter from about 9 μm to 20 μm (column 3 lines 35-40). Jaffee teaches that the mat has a major portion of glass fibers and a may comprise a minor portion of glass or polymer fibers (Abstract). Jaffee further teaches that a minor portion of the glass fibers can have a diameter of 0.4-2 μm (column 3 lines 40-47).

As to claim 7, Jaffee teaches that the glass fiber lengths can range from 0.25 inches to 1 inch (column 3 lines 55-60), or equal to 6.35-25.4mm. It should be noted that Appellant's range overlaps the range stated by Jaffee.

As to claim 8, Jaffee teaches that the glass fibers can all have the same length (column 3 lines 54-56).

As to claim 9, Jaffee teaches that the latex, or "resinous binder", comprises a crosslinkable vinyl chloride acrylate copolymer latex (column 3 lines 60-67). Jaffee states that an aqueous stearylated melamine emulsion can be added to the latex to act as an external crosslinker (column 4 lines 14-30). Therefore, it is the position of Examiner that the final product latex would be crosslinked as required by Appellant.

As to claim 10, Jaffee teaches that the latex, or "resinous binder", comprises a crosslinkable vinyl chloride acrylate copolymer latex (column 3 lines 60-67) which is subsequently crosslinked (column 4 lines 14-30). It is the position of Examiner that the crosslinked latex is equivalent to Appellant's "modified acrylic latex binder" because an acrylate is an acrylic.

As to claims 11-12, Jaffee teaches that the stearylated melamine emulsion, which acts as a crosslinker, is present in the amount of up to 10 weight percent (column 4 lines 30-38).

As to claim 13, Jaffee teaches that stearylated melamine emulsion is mixed with copolymer latex and water to create a binder for the mats (column 4 lines 15-20).

As to claim 14, Jaffee teaches that the crosslinkable vinyl chloride acrylate copolymer latex has a glass transition temperature of up to 113 degrees F (column 3 lines 60-68). It should be noted that Appellant requires a glass transition temperature range of about 15 to 45 degrees Celsius (15-133 degrees F).

As to claim 15, Jaffee teaches that the stearylated melamine emulsion provides water repellency to the mat (column 4 lines 20-25).

As to claims 17 and 18, Jaffee teaches that the facer material or "fibrous mat" can weigh about 1.8 to 2.2 pounds per 100 square feet (column 3 lines 18-25).

As to claim 19, Jaffee teaches that the facer material or "fibrous mat" can preferably weigh about 1.8 to 2.2 pounds per 100 square feet (column 3 lines 18-25). Jaffee indicates that the mat can be any weight (column 3 lines 14-18).

As to claims 23 and 24, it should be noted that Jaffee states that it is known to face a gypsum wall board with a fiber glass nonwoven mat as shown in USPN 4,647,496, the disclosure of which was incorporated by reference. It should be noted that phase "incorporated by reference" means that the information incorporated is as much a part of patent as if the text was repeated in the patent, and should be treated as part of the text of the patent. Therefore, although not explicitly taught in Jaffee, the incorporated USPN 4,647,496 teaches that the gypsum core has water-resistant properties imparted by the incorporation of one or more additives (column 9 lines 49-60). USPN 4,647,496 also teaches that the gypsum board can further comprise a paper fiber which acts as a viscosity-control agent (column 13 lines 15-20).

As to claim 29, Jaffee teaches a nonwoven fibrous mat for use as a facer on a gypsum insulating board (column 2 lines 1-15). Jaffee teaches that the mat may comprise a major portion of textile glass fibers and a minor portion of polymer fibers (column 2 lines 50-60). Jaffee teaches that the nonwoven mat is bound together with a latex (column 2 lines 35-45). Examiner equates the latex to Appellant's "resinous binder". Jaffee teaches that the glass fibers can have a length between 0.25 and 1 inch (column 3 lines 55-60). Examiner equates this short length to Appellant's "chopped continuous fibers". Jaffee teaches that the glass fibers have an average diameter from about 9 μm to 20 μm (column 3 lines 35-40).

As to claims 1, 4-6, 8, 19, 22, 27, 29, 30 and 32, Jaffee fails to disclose that the average fiber diameter ranges specifically from 9.5-12.5 μm and the average fiber length ranges specifically from 6-12 mm as required by claims 1, 22, 27, 29 and 32, the glass fibers having a diameter of between 9.5-12.5 μm comprise at least 90% by weight of the glass fibers as required by claims 4 and 30, at least 95% as required by claim 5, at least 97% by weight as required by claim 6, the chopped glass fibers have a fiber length ranging from about 6-18mm as required by claim 8, and the fibrous mat has a basis weight of about 1.25 ± 0.2 pounds per 100 square feet as required by claim 19. However, in the absence of unexpected results, it would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the fiber diameter, length, proportion of glass fibers and basis weight since it has been held that where general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454 USPQ 233 (CCPA 1955). In the present invention, one would have been motivated to optimize the fiber diameter, length, proportion of glass fibers and basis weight in order to create a composite with

the desired properties such as flexibility and strength while minimizing skin irritation during installation.

As to claims 26 and 31, although Jaffee does not explicitly teach the claimed flame resistance to pass the test of ASTM Method E84, Class 1 as required by claim 26 and a permeability of 300 cfm/ft² as required by claim 31, it is reasonable to presume that said properties are inherent. Support for said presumption is found in the use of like materials (i.e. a gypsum board sandwiched by two facing layers comprising chopped glass fibers having a diameter from 9.5-12.5µm) which would result in the claimed properties. The burden is upon the Appellant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed property would obviously have been present once the Jaffee product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

3. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,772,846 to Jaffee in view of USPN 6,365,533 to Horner.

Jaffee teaches the claimed invention above but fails to disclose that the second facer can comprise kraft paper.

Horner is directed to a foamed facer suitable for use in the construction industry comprising a dry preformed glass fiber mat containing a binder (Abstract). Horner teaches that the first and second facers can be of the same or of a different composition than that of this invention. More specifically, one of the facer sheets maybe be selected from those conventionally employed such as kraft paper and the other facer sheet is one of the current invention which enhances the composite (column 6 lines 1-15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a kraft paper as one of the facer materials as suggested by Horner in the gypsum board composite of Jaffee motivated by the desire to save manufacturing costs by employing a conventional facer on one side and the improved and enhanced facer on the other side.

4. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,772,846 to Jaffee in view of USPN 7,056,582 to Carbo.

Jaffee teaches the claimed invention but fails to teach that the core may further comprise a biocide. Carbo is directed to a mold resistant acoustical panel (Title). Carbo teaches, during manufacture of the panels, the zinc pyrithione is added to the slurry of water, fillers and binders that is used to form the panel. It is particularly surprising that the pyrithione salt added to the core protects both the panel core and the coating material. The panels of the present invention having zinc pyrithione incorporated only in the core exhibit improved mold resistance to an extent that would not be expected by incorporation of the zinc pyrithione into the core only. Regardless of the actual mechanism, biocides that display this behavior are useful in the acoustical panels of this invention (column 5 lines 25-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a biocide into the core of Jaffee as suggested by Carbo motivated by the desire to create a mold resistant panel.

(10) Response to Argument

Rejection of claims 1-6, 8-15, 17-19, 21-24, 26-27, and 29-32 under 35 U.S.C. 103(a) as being unpatentable over Jaffee

Contrary to the current rejection, Appellant asserts that Jaffee does not disclose a fibrous mat comprising a nonwoven, glass fiber web, wherein the glass fibers consist essentially of chopped glass fibers having the claimed average fiber diameter and average fiber length. Additionally, Appellant asserts that “consisting essentially of” precludes additional polymer fibers.

Regarding Appellants’ arguments, Examiner respectfully disagrees. It should be noted that Appellant argues throughout Appellant’s brief that Appellant believes that Jaffee does not “anticipate” the claimed subject matter. However, it is clear that the grounds for rejection is based on 35 U.S.C. 103(a).

Jaffee teaches a nonwoven glass fiber mat for facing gypsum board (Title) comprising E glass fibers having average diameter from about 9 μ m to about 20 μ m, preferably from about 10 μ m to about 16 μ m (column 3 lines 33-46). The fiber lengths may be 0.25 inches to 1.0 inch, which is equivalent to 6.35 mm to 25.4 mm. The nonwoven includes a resinous binder comprising a crosslinkable vinyl chloride acrylate copolymer latex (column 3 lines 60-67). Jaffee states that an aqueous stearylated melamine emulsion can be added to the latex to act as an external crosslinker (column 4 lines 14-30) and that the resinous binder may comprise a crosslinkable vinyl chloride acrylate copolymer latex (column 3 lines 60-67) which is subsequently crosslinked (column 4 lines 14-30). The fibrous mat can weigh about 1.8 to 2.2 pounds per 100 square feet (column 3 lines 18-25).

Jaffee states that it is known to face a gypsum wall board with a fiber glass nonwoven mat as shown in USPN 4,647,496, the disclosure of which was incorporated by reference. It should be noted that phrase "incorporated by reference" means that the information incorporated is as much a part of patent as if the text was repeated in the patent, and should be treated as part of the text of the patent. Therefore, although not explicitly shown in Jaffee, the incorporated USPN 4,647,496 shows in Figure 8 that the nonwoven fibrous mat facing materials are applied to both sides of the gypsum board. It should be noted that both of the facing materials have the same composition. USPN 4,647,496 further teaches that the gypsum material is "set" (Abstract). Examiner equates the facing material applied to the first and second sides of the gypsum board as "first facer" and "second facer".

Jaffee teaches that the mat of Jaffee is more flame resistant and more flexible, is more "friendly" to those handling and cutting the mat, there is less dust generated in cutting, less abrasive irritation to the skin of the workers involved, and is less costly to manufacture (column 6 lines 17-31).

Appellant asserts that "consisting essentially of" precludes additional polymer fibers. Appellant claims that the *glass fibers* consist essentially of chopped glass fibers having the claimed average fiber diameter and claimed average fiber length. Although Appellant appears to argue that the *fibrous mat* consists essentially of chopped glass fibers, therefore providing a basis for Appellant's argument that additional polymer fibers are precluded from the claimed invention, Appellant does not claim such a limitation. Appellant argues limitations which are not in the claim. The claim recites that the fibrous mat comprises a nonwoven glass fiber web bonded together with a resinous binder. The fibrous mat does not preclude additional elements

since the claim does not limit the elements comprising the fibrous mat. Therefore, the chopped glass fibers comprising the *fibrous mat* consist essentially of chopped glass fibers having the claimed average fiber diameter and the claimed fiber length. As set forth above, Jaffee clearly teaches that the chopped glass fibers *consist essentially of* glass fibers having an average diameter from about 9 μm to about 20 μm , preferably from about 10 μm to about 16 μm (column 3 lines 33-46).

Regarding the exclusion of additional elements, the claimed invention does not preclude the addition of elements not specified in the claim. Although Jaffee recites that a minor portion of glass microfibers having an average diameter of 0.4-2 μm and microdenier polymer fibers *may* be added, Jaffee clearly states that the inclusion of these elements is considered when forming an alternative embodiment wherein the invention of Jaffee is used for the purpose as an air filter media (*see* column 3 lines 41-46) since the smaller fibers are used to catch very fine particles. Additionally, Appellant's specification teaches that the claimed invention includes a small fraction of fibers that are broken into two or more pieces and a very small fraction of small glass fibers and chips, since the presence of such broken and chipped fibers in a chopped fiber product is well known in the fiber industry (Appellant's specification, page 7 lines 23-26). Clearly the chopped glass fibers of Jaffee are substantially similar to the claimed chopped glass fibers and Jaffee teaches that the microfibers having an average diameter of 0.4-2 μm and microdenier polymer fibers are not necessary for the invention of Jaffee.

Polymer fibers are not chopped glass fibers. The limitation requiring that at least about 90%, or at least about 95%, or at least about 97% by weight of the chopped glass fibers of the gypsum board have a diameter between about 9.5 and 12.5 μm only pertains to the chopped glass

fibers. As set forth above, Jaffee teaches that the glass fibers have average diameters from about 9 μm to about 20 μm , preferably from about 10 μm to about 16 μm . Since polymer fibers are not chopped glass fibers, the addition of any percentage of polymer fibers would not reduce the weight percentage of the chopped glass fibers. In other words, Appellant appears to argue that the combined weight percentage of chopped glass fibers and polymer fibers limits the weight of the chopped glass fibers, when the claimed invention only requires juxtaposing chopped glass fibers with other glass fibers. Since the additional glass microfibers having an average diameter of 0.4-2 μm and microdenier polymer fibers are not necessary for the invention of Jaffee, the chopped glass fibers, in totality according to the teachings of Jaffee, must necessarily have average diameters from about 9 μm to about 20 μm , preferably from about 10 μm to about 16 μm .

Appellant argues that Jaffee does not indicate the basic and novel characteristics of the present claimed mat and construction board, since the addition of certain microfibers affects properties that are material to Appellant's mat. It should be noted that this section of Appellant's brief is directed to the rejections regarding independent claims 1, 27, 29, and 32, each of which does not claim any properties. As discussed above, Jaffee teaches that the mat of Jaffee is more flame resistant and more flexible, is more "friendly" to those handling and cutting the mat, there is less dust generated in cutting, less abrasive irritation to the skin of the workers involved, and is less costly to manufacture (column 6 lines 17-31). Additionally, the claims do not preclude additional elements since each of the independent claims only requires that the *glass fibers* consist essentially of chopped glass fibers with the claimed average fiber diameter and claimed average fiber length. Since Jaffee appears to teach a substantially similar structure and composition as the claimed invention, and Appellant's arguments as to the basic and novel

characteristics associated with various properties are not claimed in the independent claims, Jaffee appears to teach each of the limitations of the claimed invention. Additionally, one of ordinary skill in the nonwoven glass fiber mat art would have been motivated to optimize the fiber diameter, length, proportion of glass fibers and basis weight in order to create a composite with the desired properties such as flexibility and strength while minimizing skin irritation during installation.

Appellant argues that cited reference USPN 4,637,951 to Gill teaches that the inclusion of microfibers of at least certain diameters affect physical properties of the mat. Examiner respectfully disagrees. While Gill appears to disclose the combination of glass fibers and microfibers with a porosity of no greater than 225 cfm/ft², Gill does not teach the invention of Jaffee and is not related as the closest art to Jaffee since Gill requires glass microfibers having a mean diameter in the neighborhood of 1μm, and Jaffee does not require the inclusion of such fibers.

Gill is rebuttable by USPN 6,187,697 to Jaffee ('697). '697 discloses a multilayer mat comprising a majority of glass fibers which may be at least 0.25in or longer with a diameter of 10μm in one embodiment, although the lengths and fiber diameters may vary, and the web is bonded together with a resin binder (column 5 lines 27-35, column 7 lines 49-64, column 2 lines 19-26). Examples 3-8 appear to disclose that a glass fiber mat with fibers having a diameter of 10μm and a length of 0.5 can have an air permeability of greater than 300 cfm/ft² (column 7 line 49 to column 8 line 32). Additionally, the '697 reference states that the permeability of nonwoven mats can be reduced substantially in the control one layer by increasing the fiber length and fiber diameter and including microfibers having an average fiber diameter of between

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2 and 3 μm ('697, Examples 9-13). While Appellant argues that the Gill reference establishes that at least some of the mats within the Jaffee disclosure do not possess the requisite air permeability, Examiner respectfully disagrees. The Jaffee reference discloses the claimed structure and chemical composition in addition to the claimed ranges which Appellant relies upon to establish the claimed properties. Additionally, as set forth above, '697 appears to teach a substantially similar structure and invention as Jaffee and the claimed invention. Therefore, properties associated with the claimed mat, such as air permeability which is not claimed in the independent claims, appear to be inherent to the structure of the nonwoven of Jaffee.

Appellant argues that it is especially surprising and unexpected from the prior art that properties such as smoothness, high permeability, and flame resistance would not have been obvious since a skilled artisan would have inferred that the smoothest surface would result from fabricating mats with the smallest diameter fibers. In support, Appellant submitted two Declarations which Appellant believes establishes that nonwoven glass fiber mats having an average diameter of 11 μm is demonstrably smoother than boards faced with 8 and 13 μm fiber mats. Examiner respectfully disagrees. A review of the data in the Declarations is necessary.

Appellant's Declaration of May 3, 2006, sets forth on page 4 that four tests were run with glass fibers having average fiber diameters of 13, 11, 8, and 11, with average fiber lengths of 19, 12, 9 , and 19 mm respectively.

Sample Number	Avg. Fiber Diameter (μm)	Avg. Fiber Length (mm)	Average Intensity (arb. units)	Standard Deviation (arb. units)	Standard Error
1	13	19	1519	145	9.5%
2	11	12	1837	139	7.6%
3	8	9	1837	152	8.3%
4	11	19	1535	143	9.3%

It should be noted that Sample 1 is outside Appellant's claimed fiber diameter range and fiber length range, Sample 2 is inside Appellant's claimed fiber diameter range and inside the fiber length range, Sample 3 is outside Appellant's claimed fiber diameter range and inside the fiber length range and Sample 4 is inside Appellant's claimed fiber diameter range and outside the fiber length range. It should also be noted that Appellant's data does not establish results for the entire claimed range. To establish unexpected results over a claimed range, Appellant should compare a sufficient number of tests both inside and outside the claimed range to show the criticality of the claimed range. *In re Hill*, 284 F.2d 955, 128 USPQ 197 (CCPA 1960). Furthermore, whether the unexpected results are the result of unexpectedly improved results or a property not taught by the prior art, the objective evidence of nonobviousness must be commensurate in scope with the claims which the evidence is offered to support. In other words, the showing of unexpected results must be reviewed to see if the results occur over the entire claimed range. *In re Clemens*, 622 F.2d 1029, 1036, 206 USPQ 289, 296 (CCPA 1980).

Examiner submits that Appellant has not provided enough Samples to demonstrate that the unexpected results occur over the entire claimed range and would not occur in the broader range of 9-20 μm disclosed by Jaffee. Appellant has only provided one sample which meets Appellant's diameter and length ranges and one sample which is outside Appellant's diameter and length ranges. Furthermore, Appellant has not determined a trend in the exemplified data which would allow the artisan to reasonably extend the probative value thereof. Since Appellant is attempting to establish that minor variations in the average fiber diameter lead to unexpected results, Appellant has only established that glass fibers having an average fiber diameter of 11 μm and an average fiber length of 12mm results in a mat with characteristics that may be different

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from glass fibers which are not 11 μm in average fiber diameter and 12mm in average fiber length. Appellant has not established that varying the average fiber diameter and varying the average fiber length *within the claimed range* leads to results *within the claimed range* which are unexpected to one of ordinary skill in the glass fiber mat over a broader range (such as that set forth in Jaffee) due to the minor variations. The Declaration is not persuasive as it does not show that the fiber range results in unexpected results.

Appellant's Declaration of October 24, 2006, states that the glass fibers described on page 7, lines 29-32 of the specification, have diameters centered at about 16, 15, 13, 11 and 8 μm and having fiber lengths of about 25, 25, 19, 12 and 9mm, respectively. The specification discloses that fibers having a diameter within a narrow range centered at about 11 μm with a length of about 12 mm, as stated in the Declaration, is smoother than the aforementioned diameters ranging from 8-16 μm . The Declaration only appears to show that a fiber with an average fiber diameter within the range of 8-16 μm and with an average fiber length between 9-25mm, specifically with an average fiber diameter of 11 μm and an average fiber length of 12mm is smoother than if the average fiber diameter and average fiber length were not 11 μm and 12 mm respectively. It does not appear to demonstrate that results would be surprising or unexpected within the claimed range; only that glass fiber with an average fiber diameter of exactly 11 μm and an average fiber length of exactly 12mm may be surprising or unexpected in the larger diameter range of 8-16 μm and with an average fiber length between 9-25 mm.

Appellant asserts that the results of using fibers in the narrow range claimed are unexpected since one of ordinary skill would have expected that a board made with mats having the smallest fiber diameters (8 μm) would have been smoother than a board made with 11 and

13 μm . Based on Appellant's logic, if given the choice of forming a mat with glass fibers having an average fiber diameter between 8-16 μm , one of ordinary skill would have expected that the mat formed with glass fibers having an average fiber diameter on the smaller end would be the smoothest. Therefore, Appellant is attempting to reason that one of ordinary skill would have expected the mat formed with glass fibers having an average diameter of 8 μm would have been the smoothest, whereas Appellant is attempting to show that a mat formed with glass fibers having an average diameter of 11 μm is smoother. It should be noted that Appellant does not juxtapose a mat formed with glass fibers having an average diameter of about 9.5 μm or 12.5 μm against a mat formed with glass fibers having an average diameter of 11 μm or 8 μm .

Appellant is not making a comparison to the closest prior art. Jaffee teaches that although textile glass fibers are glass fibers having an average fiber diameter of about 5 μm or larger (column 2 lines 14-15), the Jaffee invention uses typically glass fibers having average diameters from about 9 μm to about 20 μm , but preferably from about 10 μm to about 16 μm . Based on Appellant's logic, one of ordinary skill in the nonwoven glass fiber mat art at the time the invention was made, when viewing the teachings of Jaffee, would similarly have expected that the mat formed with glass fibers having an average fiber diameter on the smaller end would be smoothest. Therefore, one of ordinary skill would be motivated to use glass fibers having average diameters closer to 9 μm if desiring to form a smoother mat. Based on Appellant's logic, it is unclear how one of ordinary skill in the art would not have expected that glass fibers having average fiber diameters between about 9.5 and 12.5 would result in a smoother board. Conversely, if given the choice of forming a mat with glass fibers having an average fiber diameter between 9-20 μm or 10-16 μm , one of ordinary skill in the art would have expected that

the mat formed with glass fibers having an average fiber diameter on the smaller end would be the smoothest. Appellant's submissions regarding the surprisingly unexpectedness of the range is not persuasive.

Appellant emphatically traverses Examiner's suggestion that Jaffee "anticipates" claims 4-6 since there is no disclosure in Jaffee calling for a narrow range of fiber diameters with the claimed weight percentages of the fibers. Examiner respectfully disagrees. Appellant's argument is believed moot since Jaffee teaches that the glass fibers have average diameters from about 9 μm to about 20 μm , preferably from about 10 μm to about 16 μm and the additional glass microfibers having an average diameter of 0.4-2 μm and microdenier polymer fibers are not necessary for the invention of Jaffee. The chopped glass fibers, in totality according to the teachings of Jaffee, must necessarily have average diameters from about 9 μm to about 20 μm , preferably from about 10 μm to about 16 μm . Therefore, the weight percentage of the *chopped glass fibers* appear to anticipate the claimed range. Alternatively, one would have been motivated to optimize the fiber diameter, length, proportion of glass fibers and basis weight in order to create a composite with the desired properties such as flexibility and strength while minimizing skin irritation during installation.

Appellant asserts that the Jaffee invention would not pass the test of ASTM Method E84, Class 1, since presumably, the mats are not substantially identical and do not exhibit high flame resistance. Additionally, Appellant argues that Examiner improperly asserts that Jaffee does not disclose or suggest flame resistance. Examiner respectfully disagrees. It should be noted that Appellant does not claim "high" flame resistance; only that the board has flame resistance sufficient to pass the test of ASTM Method E84, Class 1. Appellant improperly construes

Examiner's rejection, since Examiner's statement was not viewed in totality. Jaffee teaches that an object of the invention is to improve flame resistance and teaches an example that is more flame resistant in Example 3. Although Jaffee teaches improved flame resistance, as set forth in the rejection above, "Jaffee does not *explicitly* teach the claimed flame resistance to pass the test of ASTM Method E84, Class 1 as required by claim 26" (emphasis added). Simply because Jaffee does not disclose subjecting the invention of Jaffee to the claimed test does not necessarily entail that the invention of Jaffee would not pass the claimed test. Products of identical structure and composition cannot have mutually exclusive properties. Jaffee teaches a substantially similar structure and composition (a gypsum layer having first and second facers, wherein the first facer comprises a nonwoven mat comprising glass fibers and a resinous binder, the glass fibers consisting essentially of chopped glass fibers having average fiber diameters from about 9- $20\mu\text{m}$ and average fiber lengths between to 6.35-25.4 mm) as the claimed invention. Therefore, absent evidence to the contrary, it is reasonable to presume that the invention of Jaffee would meet the claimed flame resistance to pass the test of ASTM Method E84, Class 1. In addition, the presently claimed property would obviously have been present once the Jaffee product is provided.

Appellant asserts that the claimed air permeability would not be inherent to the invention of Jaffee since the invention of Jaffee does not contain identical structural and chemical compositions. Appellant recites the aforementioned Gill reference in support. Appellant's argument is believed moot as Gill does not teach the invention of Jaffee since Jaffee does not require the inclusion of glass microfibers having a mean diameter in the neighborhood of $1\mu\text{m}$. Additionally, as set forth above, '697 appears to be the closest art to the Jaffee invention, since

'697 discloses a multilayer mat comprised of a majority of glass fibers which may be at least 0.25 in or longer with a diameter of 10 μm in one embodiment, although the lengths and fiber diameters may vary, and the web is bonded together with a resin binder (column 5 lines 27-35, column 7 lines 49-64, column 2 lines 19-26). Examples 3-8 appear to disclose that a glass fiber mat with fibers having a diameter of 10 μm and a length of 0.5in can have an air permeability of greater than 300 cfm/ft² (column 7 line 49 to column 8 line 32). '697 appears to teach a substantially similar structure and invention as Jaffee and the claimed invention. Therefore, properties associated with the claimed mat, such as air permeability which is not claimed in the independent claims, appear to be inherent to the structure of the nonwoven of Jaffee.

Rejection of claim 20 under 35 U.S.C. 103(a) as being unpatentable over Jaffee in view of Horner

Appellant argues that Horner does not cure Jaffee's lack of disclosure of the claimed mat and that a skilled person would not be motivated to look at Horner to form the claimed gypsum board. Examiner respectfully disagrees. It is well-settled that unsupported arguments are not a substitute for objective evidence. *In re Pearson*, 494 F.2d 1399, 1405, 181 USPQ 641, 646 (CCPA 1974). Horner is not relied on to teach the claimed glass fiber mat. As set forth above, Jaffee appears to teach a substantially similar structure and composition (a gypsum layer having first and second facers, wherein the first facer comprises a nonwoven mat comprising glass fibers and a resinous binder, the glass fibers consisting essentially of chopped glass fibers having average fiber diameters from about 9-20 μm and average fiber lengths between to 6.35-25.4 mm) as the claimed invention. Horner is directed to a foamed facer suitable for use in the construction

industry comprising a dry preformed glass fiber mat containing a binder (Abstract). Horner teaches that the first and second facers can be of the same or of a different composition than that of this invention. More specifically, one of the facer sheets maybe be selected from those conventionally employed such as kraft paper and the other facer sheet is one of the current invention which enhances the composite (column 6 lines 1-15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a kraft paper as one of the facer materials as suggested by Horner in the gypsum board composite of Jaffee motivated by the desire to save manufacturing costs by employing a conventional facer on one side and the improved and enhanced facer on the other side.

Rejection of claim 25 under 35 U.S.C. 103(a) as being unpatentable over Jaffee in view of Carbo

Appellant argues that Carbo does not teach the claimed nonwoven glass fiber web. However, Carbo is not relied on to teach the claimed nonwoven glass fiber web. As Jaffee appears to teach a substantially similar structure and composition (a gypsum layer having first and second facers, wherein the first facer comprises a nonwoven mat comprising glass fibers and a resinous binder, the glass fibers consisting essentially of chopped glass fibers having average fiber diameters from about 9-20 μ m and average fiber lengths between to 6.35-25.4 mm) as the claimed invention, the claim remains rejected.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Peter Y. Choi/

Examiner, Art Unit 1794

December 18, 2007

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